ABSTRACT

NONLINEAR PRECODING METHOD FOR A DIGITAL BROADCAST CHANNEL

Several subscriber signals are transmitted simultaneously and at the same frequency by a central transmitter to several decentralized receivers which do not cooperate with each other, by digital message transmission in a broadcast channel. A common transmission signal, which enables an error-free individual reception, should be generated with knowledge of all subscriber signals and of the current transmission conditions, by signal preprocessing methods on the transmission side. Known nonlinear precoding methods totally suppress the interference signals, so that the channel diversity cannot be used. In the claimed precoding method, the occurring interference signals are, on the contrary, taken into account. On the basis of a modulo arithmetic calculation, the transmission channel is not totally equalized, but virtually divided, so that the transmission of the subscriber signals is continued periodically; the signals are selected according to the minimal transmission power and pre-equalized, in a linear manner, and the residual interferences, still remaining between the subscriber signals, may assume special values from a preset set of values. The set of values is selected, so that the interference signals of the other subscribers are also merely reflected in the otherwise already existing periodic continuation and can be suppressed or used as required by a modulo decision, on the reception side.